

**Work Order ID 58195**

April 28, 2010 9:59:21 AM



Page 1

Item ID: D212-664-101TRN

Accept



Setup Start



Revision ID:

Item Name: Crosstube Turning Detail

Stop



Start Date: 28/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 05/05/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:



Date: 10-4-28

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberReject  
NumberInsp.  
Stamp

Draw Nbr	Revision Nbr									
D212-664-141	Rev D									

100



MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Q.M 10 - 04 - 29 ①

Mori Seiki CNC Lathe Large

- 1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113
- 2-Turn first side as per Folio FA113
- 3-File down transition lines smooth.

110



QC1- Inspect dimensions to dimension sheet

0.00

QC

Quality Control

Memo

0.00

Q.M 10 - 04 - 29 ①

120



MORI SEIKI CNC LATHE LARGE

0.00

Mori Seiki

Mori Seiki CNC Lathe Large

Memo

0.00

- 1-Turn second side as per Folio FA113
- 2-File down transition lines smooth.
- 3-Remove sand and plugs

Q.M 10 - 04 - 29 ①

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
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Approvals: Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center ID

130

Operation  
Description

QC1- Inspect dimensions to dimension sheet

Set Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInspec.  
Stamp

0.00

0.00

A.M 10-04-290

QC

Quality Control

140



QC8- Inspect parts - second check

0.00

A.M 10-4-29

QC

Quality Control

150



Crosstubes Chemical Conversion

0.00

A.M 10-4-29

HandFXtube

Hand Finishing Crosstubes

Memo

0.00

W/O:		WORK ORDER CHANGES						
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Page 3

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Item Name: Crosstube Turning Detail

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Start Date: 28/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 05/05/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center ID

160

Operation  
Description

QC3- Inspect Part Finish

Set Up/  
Run Hours

0.00

Draw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

QC

Memo

0.00

MB 10-04-29

Quality Control

170



Packaging

0.00

Packaging

Packaging

Memo

0.00

Identify and Stock in kanban rack  
Location: X-TUBE C22

ANM

10-04-29

180



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

10/04/30

MS

10-4-30

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# Picklist Print

April 28, 2010 9:59:26 AM

Page 1

Work Order ID: 58195



Parent Item: D212-664-101TRN



Parent Item Name: Crosstube Turning Detail

Start Date: 28/04/2010

Required Date: 05/05/2010

Comments: IPP Rev:A 08-03-06 new issue DD verified by:ec  
IPP Rev B 08.04.02 removed Polish EC verified by: DD

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D6005-128		Manufactured	No			120	Each	20.0000	1.0000			



Crosstube Material

Q.M 10-04-2010

Warehouse Loc Qty Loc Code

Location

Main Warehouse

LG	20	
53593	20	

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NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	58195
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: D		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

First Article  Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	0.200	/		
	R0.063	+/-0.010	R0.063	/		
	2.740	+0.005/-0.000	2.741	/		
	5.097	+/-0.030	5.097	/		
	2.304	+0.005/-0.000	2.306	/		
	2.340	+0.005/-0.000	2.343	/		
	2.398	+0.005/-0.000	2.399	/		
	2.448	+0.005/-0.000	2.450	/		
	2.498	+0.005/-0.000	2.501	/		
	2.549	+0.005/-0.000	2.551	/		
	2.599	+0.005/-0.000	2.601	/		
	2.671	+0.005/-0.000	2.671	/		
	2.701	+0.005/-0.000	2.701	/		
SIDE B	0.200	+/-0.010	0.200	/		
	R0.063	+/-0.010	R0.063	/		
	2.740	+0.005/-0.000	2.741	/		
	5.097	+/-0.030	5.097	/		
	2.304	+0.005/-0.000	2.306	/		
	2.340	+0.005/-0.000	2.343	/		
	2.398	+0.005/-0.000	2.399	/		
	2.448	+0.005/-0.000	2.450	/		
	2.498	+0.005/-0.000	2.501	/		
	2.549	+0.005/-0.000	2.551	/		
	2.599	+0.005/-0.000	2.601	/		
	2.671	+0.005/-0.000	2.671	/		
	2.701	+0.005/-0.000	2.701	/		
	126.514	+/-0.020	126.514	/		

Measured by:	0.M	Audited by:	AWM	Prototype Approval:	N/A
Date:	10-04-29	Date:	10-4-29	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-101)	KJ/JLM	
B	06.03.15	Tolerance revised for 5.097 per Dwg Rev update	KJ/JLM	
C	07.05.28	Dwg Rev updated	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ	M

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8 7 6 5 4 3 2 1

D

Item	Qty -141	Qty -141B	Part Number	Description
1	X		D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X	D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3	1	1	D6005-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	4	4	MS21920-25	CLAMP (OR MS21920-26)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

**GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6005-128  
FINISHED LENGTH = 126.514±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF  
USING VIBRATING STYLUS
- 7) WEIGHT: D212-664-141 = 33.6 lbs (PER IIN-D212-664)  
D212-664-141B = 33.6 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY

RETURN TO

ENGINEERING

UNCONTRACTED COPY

SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO. 58195*BD 10-4-28*

RELEASED

2009-10-29

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4.2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B8-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>PH</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<i>PH</i>	DRAWING NO. D212-664-141 REV. D	
MFG. APPR.	<i>PH</i>	SHEET 1 OF 4	
APPROVED	<i>PH</i>	TITLE	
DE APPR.	<i>PH</i>	SCALE	
DATE	09.09.30	XTUBE ASS'Y (205/212/412 HI FWD) NTS	

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8 7 6 5 4 3 2 1

3 2 1

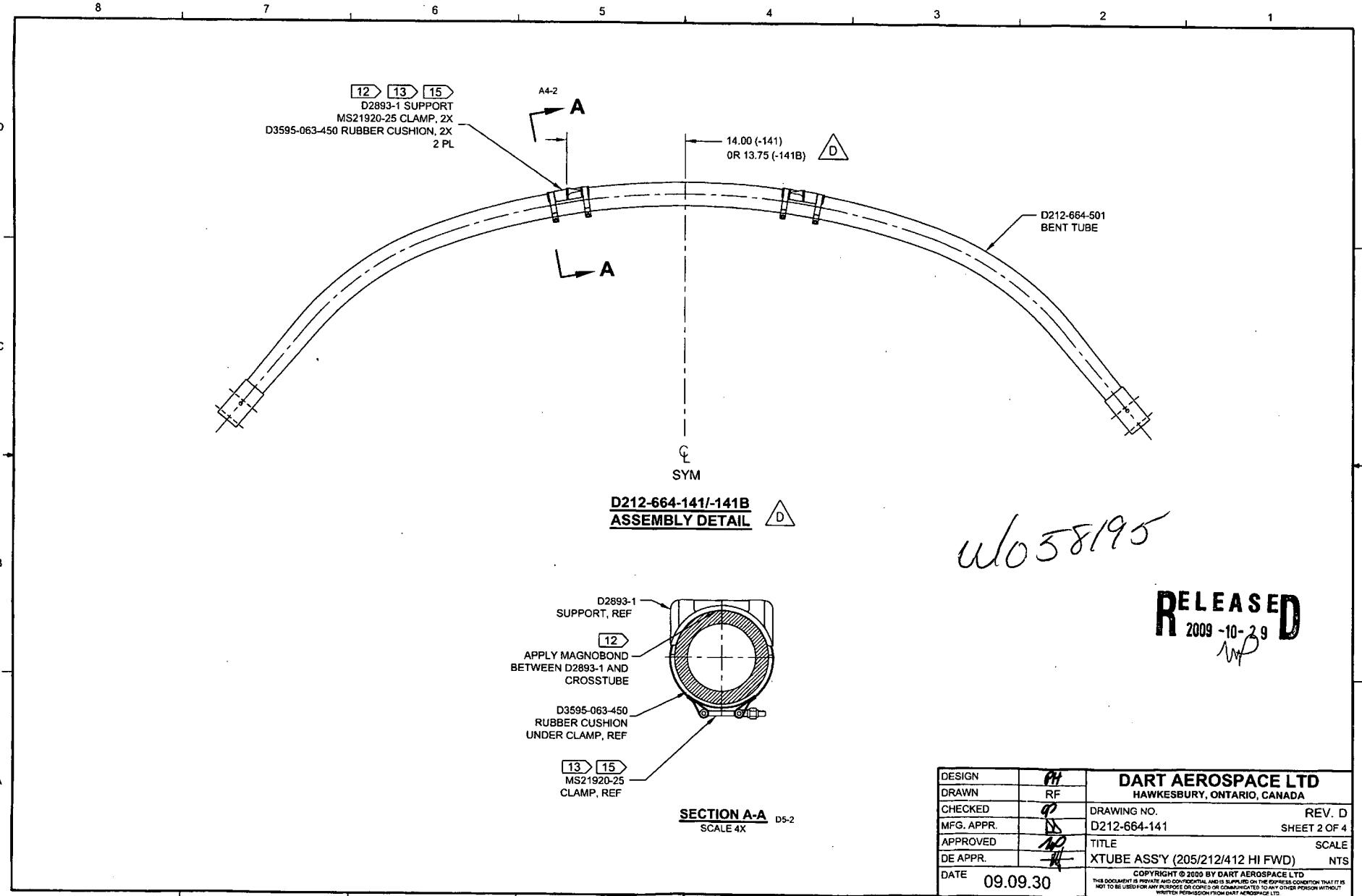
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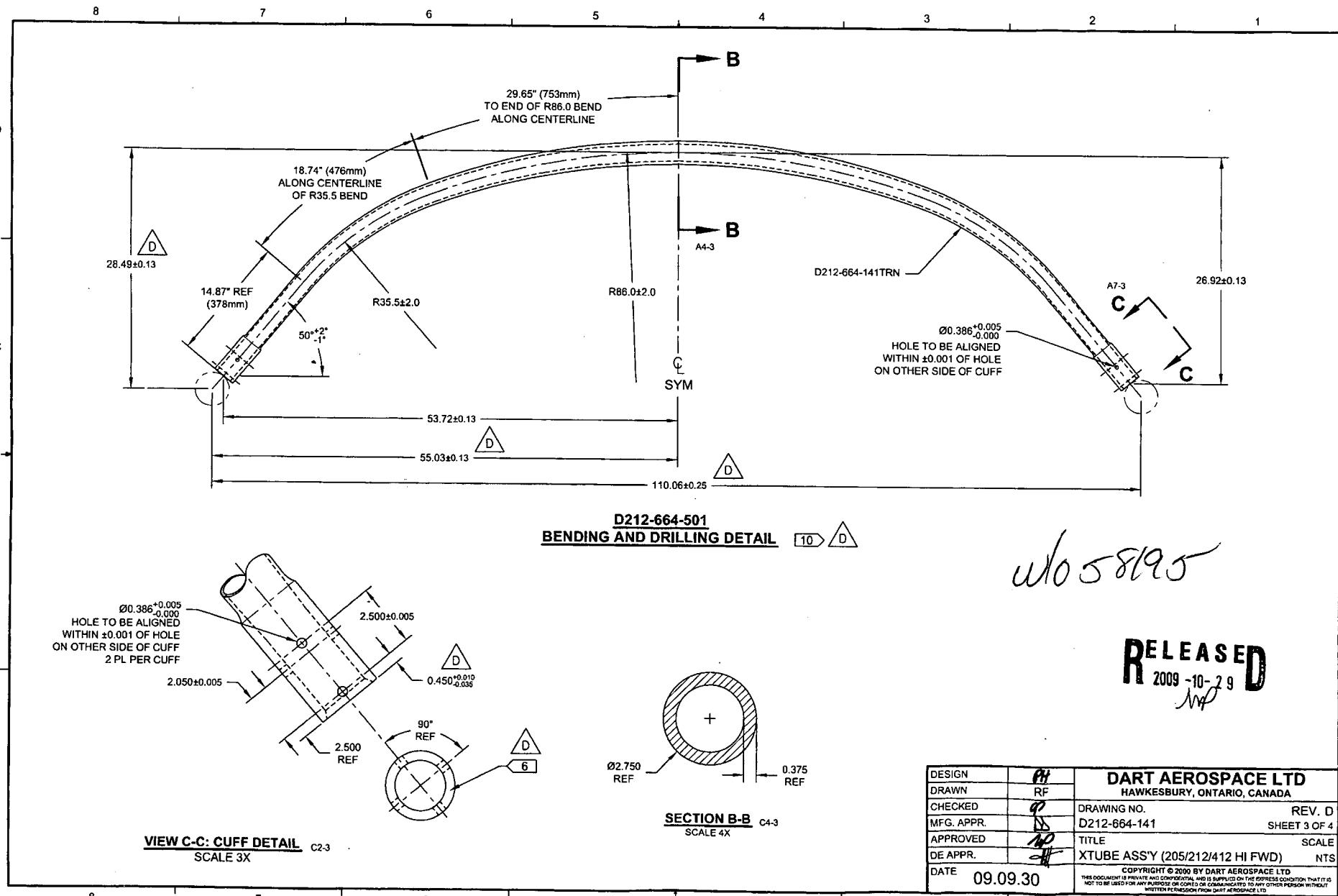
DESIGN	<i>PH</i>	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	<i>PP</i>	DRAWING NO. REV. D
MFG. APPR.	<i>AS</i>	D212-664-141 SHEET 2 OF 4
APPROVED	<i>AS</i>	TITLE SCALE
DE APPR.	<i>AS</i>	XTUBE ASS'Y (205/212/412 HI FWD) NTS
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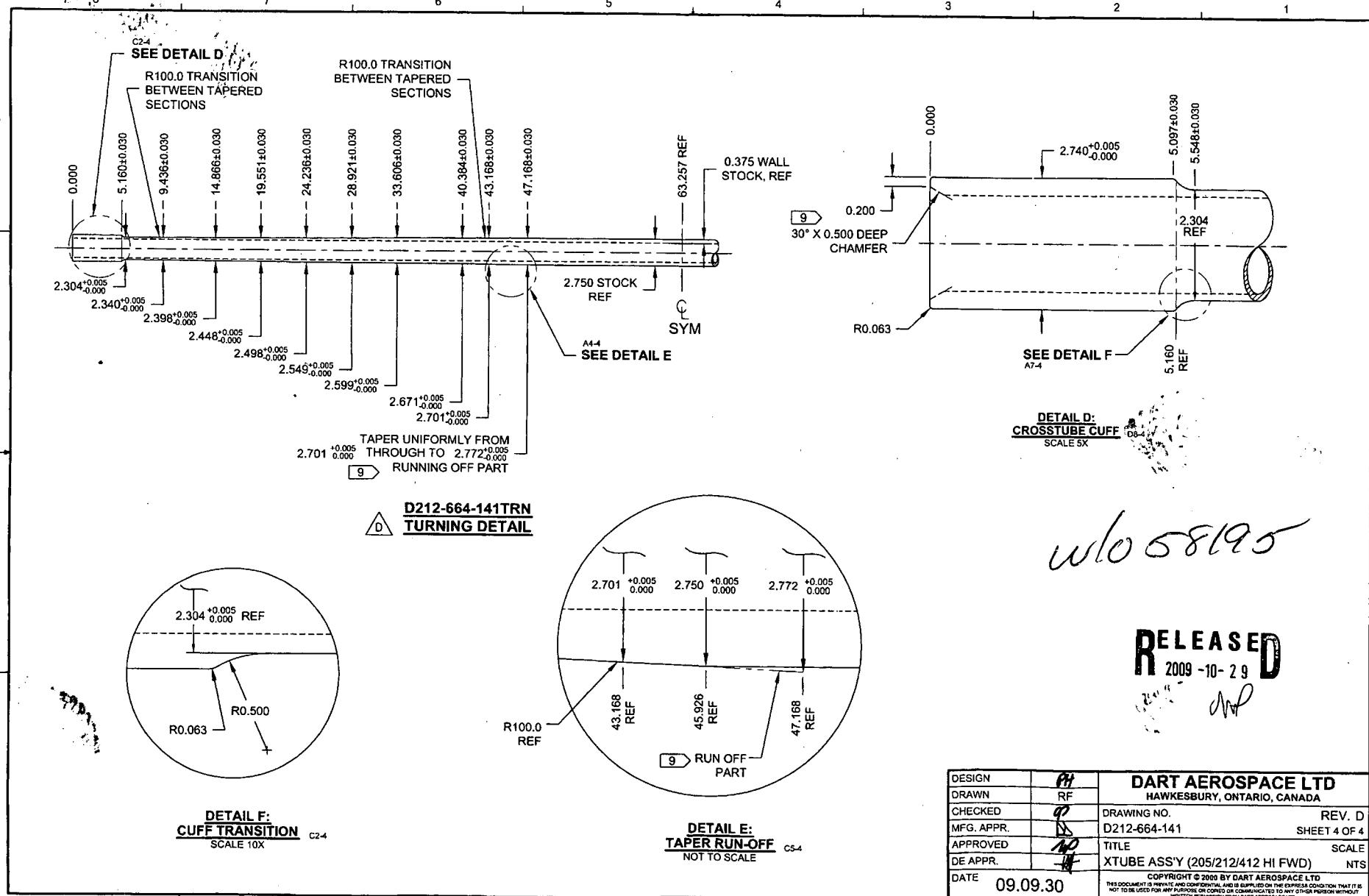


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